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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/588,773	08/08/2006	Toshihiro Iwakuma	292948US0PCT	4654
22850	7590	06/02/2009	EXAMINER	
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			YANG, JAY	
		ART UNIT	PAPER NUMBER	
		4132		
			NOTIFICATION DATE	DELIVERY MODE
			06/02/2009	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/588,773	IWAKUMA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	JACK YANG	4132	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_.
- 2a) This action is **FINAL**.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-24 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_ is/are allowed.
- 6) Claim(s) 1-24 is/are rejected.
- 7) Claim(s) \_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 08 August 2006 is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. ____ .
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)	5) <input type="checkbox"/> Notice of Informal Patent Application
Paper No(s)/Mail Date ____ .	6) <input type="checkbox"/> Other: ____ .

**DETAILED ACTION*****Claim Rejections – 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 19-21 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Higashi et al. (US 6,617,051 B1).

Regarding Claim 19, Higashi et al. discloses a wide variety of light-emitting material for the light-emitting layer (col. 9-10). The method of detecting possible impurities in the material, in which "the halogen element mass concentrations of bromine, iodine, and chlorine as impurities are identified respectively by inductively coupled plasma-mass spectrometry (ICP-MS analysis) or a coulometric titration method, adds no further limitations to this claim and thus does not differentiate it from the prior art.

Regarding Claims 20-21, Higashi et al. discloses that the organic compounds produced for use in an organic EL device should be controlled so that their impurity content (including halogens) is smaller than 1000 ppm, including 0 ppm (col. 32, lines 39-49). This suggests an expected impurity concentration range between 0-1000 ppm, which read on the claim.

Regarding Claim 23, Higashi et al. discloses a wide variety of light-emitting material for the light-emitting layer (col. 9-10) that can also be used as

host material (col. 22, lines 36-37). As mentioned above in this section, Higashi et al. discloses an expected halogen impurity concentration range from its production to be between 0-1000 ppm (col. 32, lines 39-49), which read on the claim.

***Claim Rejections – 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

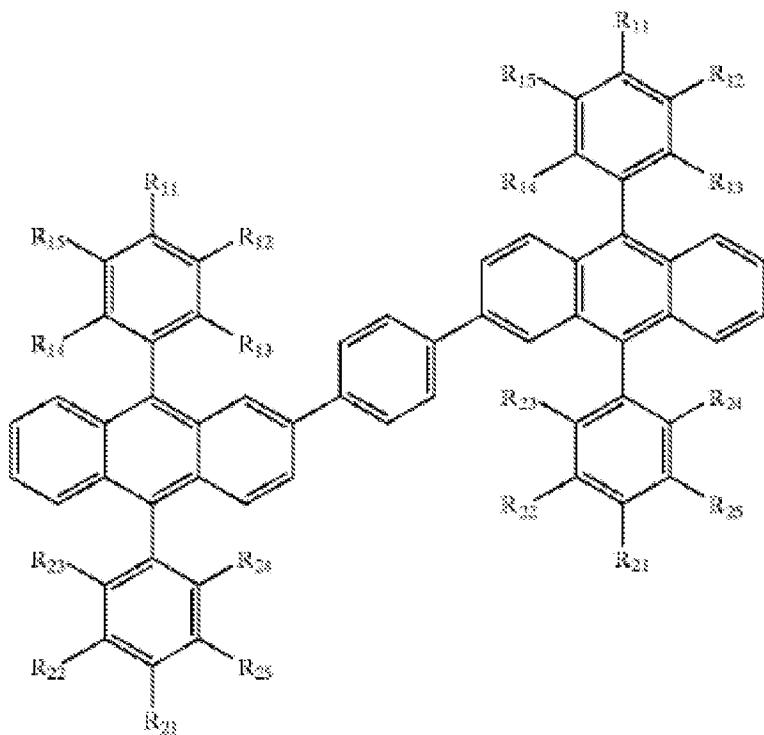
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6, 8-10, 12, 14-18, 22, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higashi et al. (US 6,617,051 B1) and further in view of Begley et al. (US 2005/0095453 A1).

Regarding Claims 1-5 and 17 Higashi et al. discloses an organic EL device comprising an organic compound layer including an organic emitting layer sandwiched between a pair of electrodes, in which that organic compound layer is formed from an organic compound material having an impurity concentration of 0 ppm (col. 46, Claim 17). Higashi et al. discloses a doping method for efficient mixed emission using a host material and a fluorescent dye dopant for the light-emitting layer (col. 22, lines 33-38). Higashi, et al. further discloses that the impurities in the organic compound material (including the host) include halogen compounds (col. 29, lines 59-63). Higashi et al., however, does not disclose a dopant that is a phosphorescent organic metal complex. Begley et al. discloses

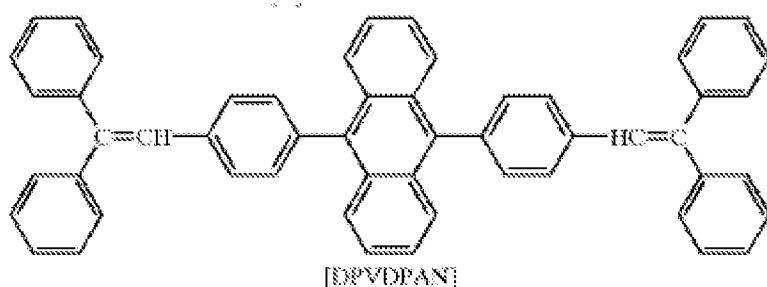
a light-emitting layer of an organic EL device comprising of a host material doped with a guest compound, in which the dopant can be chosen from phosphorescent metal complexes ([0115]). Since each individual element and its function is known in the prior art, albeit shown in separate references, the difference between the claimed subject matter and the prior art rests not on any individual element or function but in the very combination itself – that is the substitution of the fluorescent dye dopant as disclosed by Higashi et al. for a phosphorescent metal complex as disclosed by Begley et al. Thus, the simple substitution of one known element for another producing a predictable result results the claim obvious. It should be noted that the method of detecting impurities in the organic EL device as described in Claim 17, in which "the halogen element mass concentrations described above is identified respectively by inductively coupled plasma-mass spectrometry (ICP-MS analysis) or a coulometric titration method" adds no further limitations to this claim and thus does not differentiate it from the prior art.

Regarding Claims 6, 8, 12, and 14 Higashi et al. discloses the following host material in the light-emitting layer:

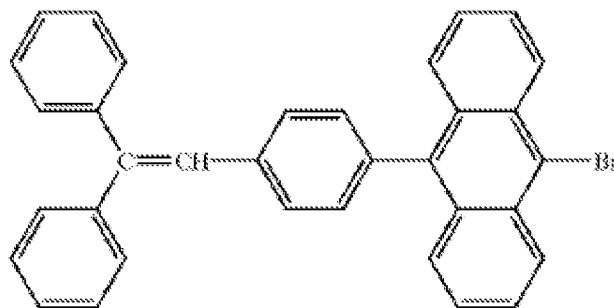


(col. 10) where  $R_{11} - R_{25}$  = alkyl such that  $Ar' =$  phenylene,  $R_A = R_B =$  aromatic hydrocarbon group with 14 carbon ring atoms substituted with 2 phenyl groups.

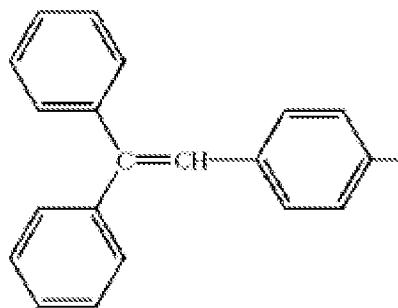
Regarding Claims 9, 10, 15, and 16 Higashi et al. discloses the following compound for host material (as well as light-emitting material) in the light-emitting layer:



(col. 38) and subsequently discloses in its synthesis the possibility of producing the following impurity that can be present:



(col. 39) such that Ar = Ar' = anthracene, X<sub>1</sub> = Br, R<sub>A</sub> = shown below:



, and X<sub>2</sub> = H such that it satisfies Formula (3) of Claim 9 and Formula (6) of Claim 10.

Regarding Claim 18, Higashi et al. discloses an electron transport/injection material Alq that is placed adjacent (col. 3, lines 20-21) to the light-emitting layer that is free from any impurities (pure, col. 41, Table 2, Examples 1-7).

Regarding Claim 22, Higashi et al. discloses a wide variety of light-emitting material for the light-emitting layer (col. 9-10) for an organic EL device such that its halogen impurity as mentioned above in the 102(b) rejection is between 0-1000 ppm (col. 32, lines 39-49). Higashi, et al., however, does not disclose a phosphorescent organic metal complex. Begley et al. discloses the use of phosphorescent metal complexes for organic EL devices as light-emitting material (dopants) ([0115]). Since each individual element and its function is

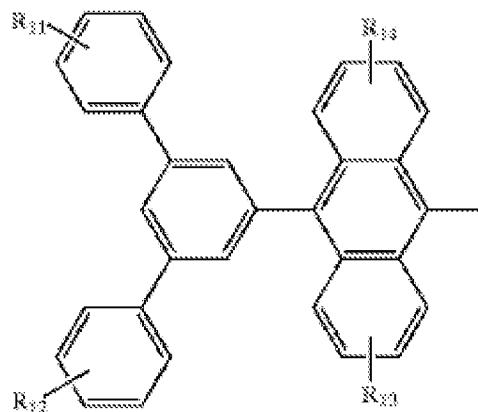
known in the prior art, albeit shown in separate references, the difference between the claimed subject matter and the prior art rests not on any individual element or function but in the very combination itself – that is the substitution of the light-emitting material as disclosed by Higashi et al. for a phosphorescent metal complex as disclosed by Begley et al. Thus, the simple substitution of one known element for another producing a predictable result results the claim obvious.

Regarding Claim 24, Higashi et al. discloses an organic EL device comprising an organic compound layer including an organic emitting layer sandwiched between a pair of electrodes. Higashi et al. discloses a doping method for efficient mixed emission using a host material and a fluorescent dye dopant for the organic emitting layer (col. 22, lines 33-38), in which the host material meets the limitations of Claim 23 as described above in the 102(b) rejection, and also such that the halogen impurity concentration of the light-emitting material (dopant) is between 0-1000 ppm (col. 32, lines 39-49). Higashi et al., however, does not disclose a phosphorescent organic metal complex. Begley et al. discloses the phosphorescent organic metal complex as a light-emitting material (dopant) as described above in the 103(a) rejection. Since each individual element and its function is known in the prior art, albeit shown in separate references, the difference between the claimed subject matter and the prior art rests not on any individual element or function but in the very combination itself – that is the substitution of the fluorescent dye dopant as disclosed by Higashi et al. for a phosphorescent metal complex as disclosed by

Begley et al. Thus, the simple substitution of one known element for another producing a predictable result results the claim obvious.

3. Claims 7, 11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higashi et al. (US 6,617,051 B1) and further in view of Begley et al. (US 2005/0095453 A1) and Hu et al. (US 6,479,172 B2). Higashi et al. in view of Begley et al. disclose the organic EL device as described in Claim 6. They do not, however, disclose an aromatic hydrocarbon represented by Formula (1) where Ar = benzentriyl, pyridinetriyl, pyrimidinetriyl, or triazinetriyl and R<sub>A</sub>, R<sub>B</sub>, and R<sub>C</sub> represent independently a substituted or non-substituted aromatic hydrocarbon group having 6-30 ring carbon atoms, a substituted or non-substituted aromatic heterocyclic group having 3-20 ring carbon atoms or a substituted or non-substituted amino group, and where R<sub>A</sub>, R<sub>B</sub>, and R<sub>C</sub> each may be the same or different, and adjacent ones may be combined with each other.

Hu et al. discloses the following compound:



(col. 6) with R<sub>11</sub>, R<sub>12</sub>, R<sub>13</sub>, and R<sub>14</sub> = H such that Ar = benzentriyl, R<sub>A</sub> = phenyl, R<sub>B</sub> = phenyl, R<sub>C</sub> = methyl anthracene as a hydrocarbon compound for host material

for an organic EL device (col. 4, lines 16-18). Since each individual element and its function is known in the prior art, albeit shown in separate references, the difference between the claimed subject matter and the prior art rests not on any individual element or function but in the very combination itself – that is the substitution of the disclosed host material of the organic EL device as disclosed by Higashi et al. in view of Begley et al. for the host material as disclosed by Hu et al. Thus, the simple substitution of one known element for another producing a predictable result results the claim obvious.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JACK YANG whose telephone number is (571)270-1137. The examiner can normally be reached on Monday to Thursday from 7:30 am to 5:00 pm Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike LaVilla can be reached on 571-272-1539. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JACK YANG/  
Examiner, Art Unit 4132

/Milton I. Cano/  
Supervisory Patent Examiner, Art Unit 4122